Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently amended) A method for reducing charge diffusion crosstalk in an image sensor having a plurality of pixels disposed in a substrate and a color filter mask positioned over the plurality of pixels such that each pixel is covered with a monochromatic filter of a certain color and that no two adjacent pixels have filters of the same color, wherein the certain colors of the monochromatic filters comprise red, green and blue, the method comprising:

sampling a first pixel to produce a first measured pixel value;

sampling a group of adjacent pixels immediately surrounding the first pixel to produce adjacent measured pixel values;

applying diffusion crosstalk coefficients applicable to the first pixel to the measured value of the first pixel and the measured values of the adjacent pixels to generate a calculated first pixel value that is corrected for charge diffusion crosstalk, wherein the crosstalk coefficients are applied using the equations

$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} 1 - 4k_{rg} - 4k_{rb} & 4k_{gr} & 4k_{br} \\ 2k_{rg} & 1 - 2k_{gb} - sk_{gr} & 2k_{bg} \\ 4k_{rb} & 4k_{gb} & 1 - 4k_{bg} - 4k_{br} \end{bmatrix} \begin{bmatrix} R_o \\ G_o \\ B_o \end{bmatrix}$$

$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} 1 - mk_{rg} - nk_{rb} & ok_{gr} & pk_{br} \\ qk_{rg} & 1 - rk_{gb} - sk_{gr} & tk_{bg} \\ uk_{rb} & vk_{gb} & 1 - wk_{bg} - xk_{br} \end{bmatrix} \begin{bmatrix} R_o \\ G_o \\ B_o \end{bmatrix}$$

where R, G and B denote measured values of red, green and blue pixels, Ro, Go and Bo denote corrected values of red, green and blue pixels, k_{rg} denotes the crosstalk from a red pixel to a green pixel, k_{rb} denotes the crosstalk from a red pixel to a blue pixel, k_{bg} ~~kb_g~~ denotes the crosstalk from a blue pixel to a green pixel, k_{br} ~~kb_r~~ denotes the crosstalk from a blue pixel to a red pixel, k_{gb} ~~k_gb~~ denotes

the crosstalk from a green pixel to a blue pixel, and k_{gr} denotes the crosstalk from a green pixel to a red pixel~~, and m, n, o, p, q, r, s, t, u, v, w, x denote the number of times a certain color is included in the group of adjacent pixels immediately surrounding the first pixel~~.

2. (cancelled)

3. (previously presented) The method of claim 1, wherein the group of adjacent pixels of different colors are of two colors that are different from the first color.

4. (previously presented) The method of claim 1, further comprising applying color correction coefficients to the first measured pixel value and the adjacent measured pixel values such that the first pixel color filter spectral response is improved in the first measured pixel value.

5. (Original) The method of claim 4, wherein the crosstalk coefficients and the color correction coefficients are combined.

6. (Original) The method of claim 1, wherein the crosstalk coefficients are combined with color correction coefficients before the crosstalk coefficients are applied to the first measured pixel value.

7. (Original) The method of claim 1, wherein the crosstalk coefficients are applied using no more than three multipliers and no more than two adders.

8. (Currently amended) An apparatus for reducing charge diffusion crosstalk in an image sensor having a plurality of pixels disposed in a substrate and a color filter mask positioned over the plurality of pixels such that each pixel is covered with a monochromatic filter of a certain color and that no two adjacent pixels have filters of the same color, wherein the certain colors of the monochromatic filters comprise red, green, and blue, the apparatus comprising:

means for inputting crosstalk coefficients for a first pixel of a first color for reducing diffusion crosstalk caused by electrons migrating to the first pixel from adjacent pixels of colors that are different from the first color;

means for sampling the first pixel to produce a first measured pixel value;

means for sampling a group of the adjacent pixels immediately surrounding the first pixel to produce adjacent measured pixel values; and

means for applying the crosstalk coefficients to the first measured pixel value and the adjacent measured pixel values such that crosstalk effects are corrected for in the first measured pixel value, wherein the crosstalk coefficients are applied using the equations

$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} 1 - 4k_{rg} - 4k_{rb} & 4k_{gr} & 4k_{br} \\ 2k_{rg} & 1 - 2k_{gb} - sk_{gr} & 2k_{bg} \\ 4k_{rb} & 4k_{gb} & 1 - 4k_{bg} - 4k_{br} \end{bmatrix} \begin{bmatrix} R_o \\ G_o \\ B_o \end{bmatrix}$$

$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} 1 - mk_{rg} - nk_{rb} & ok_{gr} & pk_{br} \\ qk_{rg} & 1 - rk_{gb} - sk_{gr} & tk_{bg} \\ uk_{rb} & vk_{gb} & 1 - wk_{bg} - xk_{br} \end{bmatrix} \begin{bmatrix} R_a \\ G_o \\ B_o \end{bmatrix}$$

where R, G and B denote measured values of red, green and blue pixels, Ro, Go and Bo denote corrected values of red, green and blue pixels, k_{rg} denotes the crosstalk from a red pixel to a green pixel, k_{rb} denotes the crosstalk from a red pixel to a blue pixel, k_{bg} ~~kb_g~~ denotes the crosstalk from a blue pixel to a green pixel, k_{br} ~~kb_r~~ denotes the crosstalk from a blue pixel to a red pixel, k_{gb} ~~$k_g b$~~ denotes the crosstalk from a green pixel to a blue pixel, and k_{gr} denotes the crosstalk from a green pixel to a red pixel~~, and m, n, o, p, q, r, s, t, u, v, w, x denote the number of times a certain color is included in the group of adjacent pixels immediately surrounding the first pixel~~.

9. (Cancelled)

10. (Previously presented) The apparatus of claim 8, wherein the group of adjacent pixels of different colors are of two colors that are different from the first color.

11. (Original) The apparatus of claim 8, further comprising means for applying color correction coefficients to the first measured pixel value and the adjacent measured pixel values such that the first pixel color filter spectral response is improved in the first measured pixel value.

12. (Original) The apparatus of claim 11, wherein the crosstalk coefficients and the color correction coefficients are combined.

13. (Original) The apparatus of claim 8, wherein the crosstalk coefficients are combined with color correction coefficients before the crosstalk coefficients are applied to the first measured pixel value.

14. (Original) The apparatus of claim 8, wherein the crosstalk coefficients are applied using no more than three multiplier means and no more than two adder means.

15. (Currently amended) An apparatus for reducing charge diffusion crosstalk, in an image sensor having a plurality of pixels disposed in a substrate and a color filter mask positioned over the plurality of pixels such that each pixel is covered with a monochromatic filter of a certain color and that no two adjacent pixels have filters of the same color, wherein the certain colors of the monochromatic filters comprise red, green, and blue, the apparatus comprising:

a first pixel that is arranged to produce a first measured pixel value in response to received filtered light;

a group of adjacent pixels immediately surrounding the first pixel that are arranged to produce adjacent measured pixel values in response to received filtered light on each pixel of the group of adjacent pixels;

a memory comprising crosstalk coefficients for correcting for diffusion crosstalk caused by electrons migrating to the first pixel from adjacent pixels of colors that are different from the first color; and

an arithmetic processor that is configured to apply the crosstalk coefficients to the first measured pixel value and the adjacent measured pixel values such that first order crosstalk effects are corrected for in the first measured pixel value, wherein the crosstalk coefficients are applied using the equations

$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} 1 - 4k_{rg} - 4k_{rb} & 4k_{gr} & 4k_{br} \\ 2k_{rg} & 1 - 2k_{gb} - sk_{gr} & 2k_{bg} \\ 4k_{rb} & 4k_{gb} & 1 - 4k_{bg} - 4k_{br} \end{bmatrix} \begin{bmatrix} R_o \\ G_o \\ B_o \end{bmatrix}$$

$$\begin{bmatrix} R \\ G \\ B \end{bmatrix} = \begin{bmatrix} 1 - mk_{rg} - nk_{rb} & ok_{gr} & pk_{br} \\ qk_{rg} & 1 - rk_{gb} - sk_{gr} & tk_{bg} \\ uk_{rb} & vk_{gb} & 1 - wk_{bg} - xk_{br} \end{bmatrix} \begin{bmatrix} R_a \\ G_o \\ B_o \end{bmatrix}$$

where R, G and B denote measured values of red, green and blue pixels, Ro, Go and Bo denote corrected values of red, green and blue pixels, k_{rg} denotes the crosstalk from a red pixel to a green pixel, k_{rb} denotes the crosstalk from a red pixel to a blue pixel, k_{bg} ~~kb_g~~ denotes the crosstalk from a blue pixel to a green pixel, k_{br} ~~kb_r~~ denotes the crosstalk from a blue pixel to a red pixel, k_{gb} ~~k_gb~~ denotes the crosstalk from a green pixel to a blue pixel, and k_{gr} denotes the crosstalk from a green pixel to a red pixel~~, and m, n, o, p, q, r, s, t, u, v, w, x denote the number of times a certain color is included in the group of adjacent pixels immediately surrounding the first pixel~~.

16. (Cancelled)

17. (Previously presented) The apparatus of claim 15, wherein the group of adjacent pixels of different colors are of two colors that are different from the first color.

18. (Original) The apparatus of claim 15, wherein the arithmetic processor is further configured to apply color correction coefficients to the first measured pixel value and the adjacent measured pixel values such that the first pixel color filter spectral response is improved in the first measured pixel value.

19. (Original) The apparatus of claim 15, wherein the crosstalk coefficients are applied using no more than three multiplier means and no more than two adder means.

20. (Cancelled)

21. (Cancelled)

22. (Cancelled)

23. (Cancelled)

24. (Cancelled)

25. (Cancelled)